

FIG.1
Related Art

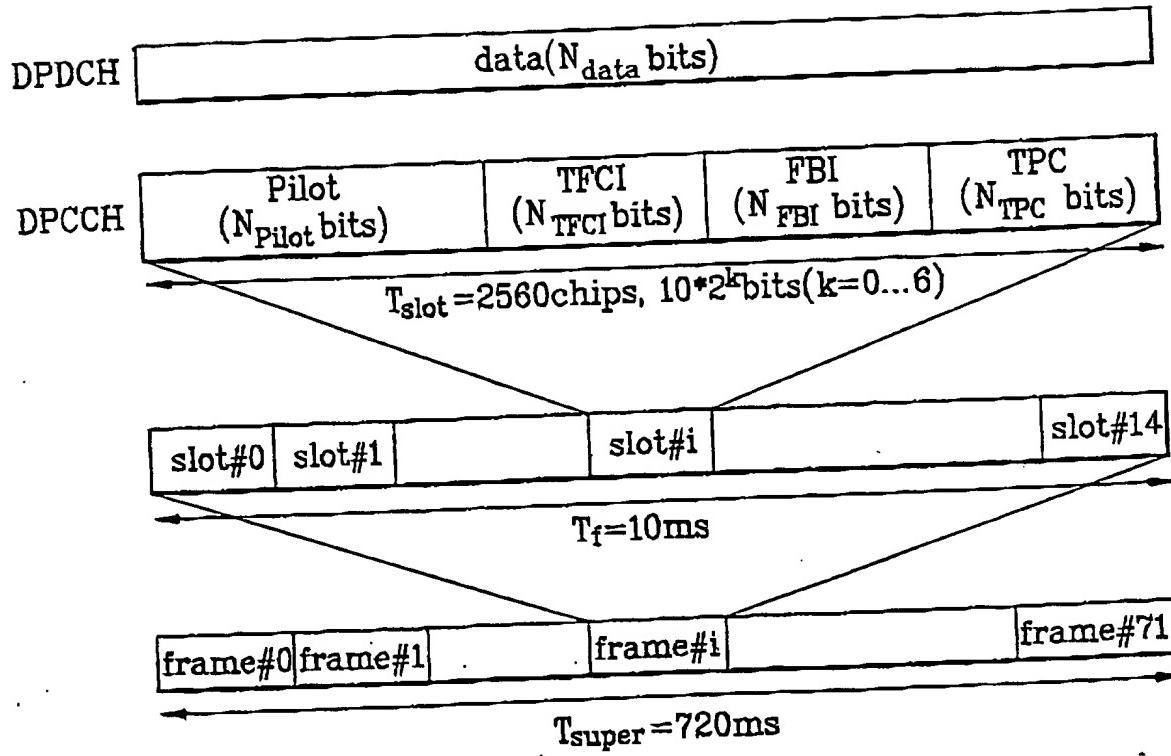


FIG.2
Related Art

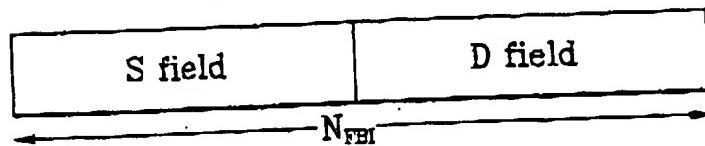


FIG. 3a

Hadarmad codes of 8 bits	Hadarmad codes of 16 bits
$H_{3,0} = 0000 \ 0000$	$H_{4,0} = 0000 \ 0000 \ 0000 \ 0000$
	$H_{4,1} = 0101 \ 0101 \ 0101 \ 0101$
	$H_{4,2} = 0011 \ 0011 \ 0011 \ 0011$
$H_{3,1} = 0101 \ 0101$	$H_{4,3} = 0110 \ 0110 \ 0110 \ 0110$
	$H_{4,4} = 0000 \ 1111 \ 0000 \ 1111$
$H_{3,2} = 0011 \ 0011$	$H_{4,5} = 0101 \ 1010 \ 0101 \ 1010$
	$H_{4,6} = 0011 \ 1100 \ 0011 \ 1100$
$H_{3,3} = 0110 \ 0110$	$H_{4,7} = 0110 \ 1001 \ 0110 \ 1001$
	$H_{4,8} = 0000 \ 0000 \ 1111 \ 1111$
$H_{3,4} = 0000 \ 1111$	$H_{4,9} = 0101 \ 0101 \ 1010 \ 1010$
	$H_{4,10} = 0011 \ 0011 \ 1100 \ 1100$
$H_{3,5} = 0101 \ 0101$	$H_{4,11} = 0110 \ 0110 \ 1001 \ 1001$
	$H_{4,12} = 0000 \ 1111 \ 1111 \ 0000$
$H_{3,6} = 0011 \ 1100$	$H_{4,13} = 0101 \ 1010 \ 1010 \ 0101$
	$H_{4,14} = 0011 \ 1100 \ 1100 \ 0011$
$H_{3,7} = 0110 \ 1001$	$H_{4,15} = 0110 \ 1001 \ 1001 \ 0110$

FIG. 3b

bi-orthogonal codes of 8 bits	bi-orthogonal codes of 16 bits
$B_{3,0} = 0000\ 0000$	$B_{4,0} = 0000\ 0000\ 0000\ 0000$
$B_{3,1} = 1111\ 1111$	$B_{4,1} = 1111\ 1111\ 1111\ 1111$
$B_{3,2} = 0101\ 0101$	$B_{4,2} = 0101\ 0101\ 0101\ 0101$
$B_{3,3} = 1010\ 1010$	$B_{4,3} = 1010\ 1010\ 1010\ 1010$
$B_{3,4} = 0011\ 0011$	$B_{4,4} = 0011\ 0011\ 0011\ 0011$
$B_{3,5} = 1100\ 1100$	$B_{4,5} = 1100\ 1100\ 1100\ 1100$
$B_{3,6} = 0110\ 0110$	$B_{4,6} = 0110\ 0110\ 0110\ 0110$
$B_{3,7} = 1001\ 1001$	$B_{4,7} = 1001\ 1001\ 1001\ 1001$
$B_{3,8} = 0000\ 1111$	$B_{4,8} = 0000\ 1111\ 0000\ 1111$
$B_{3,9} = 1111\ 0000$	$B_{4,9} = 1111\ 0000\ 1111\ 0000$
$B_{3,10} = 0101\ 1010$	$B_{4,10} = 0101\ 1010\ 0101\ 1010$
$B_{3,11} = 1010\ 0101$	$B_{4,11} = 1010\ 0101\ 1010\ 0101$
$B_{3,12} = 0011\ 1100$	$B_{4,12} = 0011\ 1100\ 0011\ 1100$
$B_{3,13} = 1100\ 0011$	$B_{4,13} = 1100\ 0011\ 1100\ 0011$
$B_{3,14} = 0110\ 1001$	$B_{4,14} = 0110\ 1001\ 0110\ 1001$
$B_{3,15} = 1001\ 0110$	$B_{4,15} = 1001\ 0110\ 1001\ 0110$
	$B_{4,16} = 0000\ 0000\ 1111\ 1111$
	$B_{4,17} = 1111\ 1111\ 0000\ 0000$
	$B_{4,18} = 0101\ 0101\ 1010\ 1010$
	$B_{4,19} = 1010\ 1010\ 0101\ 0101$
	$B_{4,20} = 0011\ 0011\ 1100\ 1100$
	$B_{4,21} = 1100\ 1100\ 0011\ 0011$
	$B_{4,22} = 0110\ 0110\ 1001\ 1001$
	$B_{4,23} = 1001\ 1001\ 0110\ 0110$
	$B_{4,24} = 0000\ 1111\ 1111\ 0000$
	$B_{4,25} = 1111\ 0000\ 0000\ 1111$
	$B_{4,26} = 0101\ 1010\ 1010\ 0101$
	$B_{4,27} = 1010\ 0101\ 0101\ 1010$
	$B_{4,28} = 0011\ 1100\ 1100\ 0011$
	$B_{4,29} = 1100\ 0011\ 0011\ 1100$
	$B_{4,30} = 0110\ 1001\ 1001\ 0110$
	$B_{4,31} = 1001\ 0110\ 0110\ 1001$

FIG. 4A

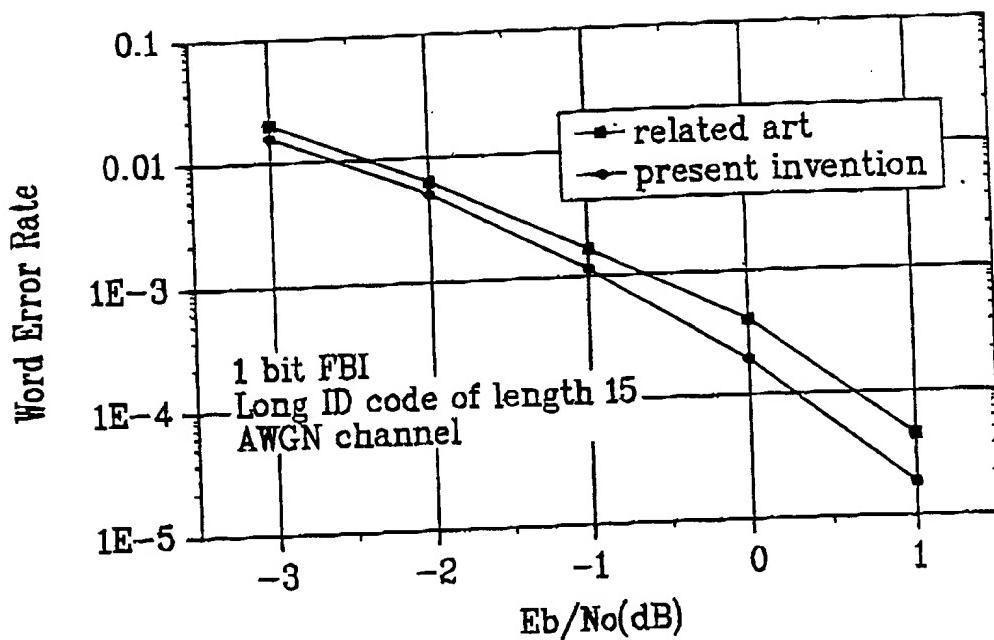


FIG. 4B

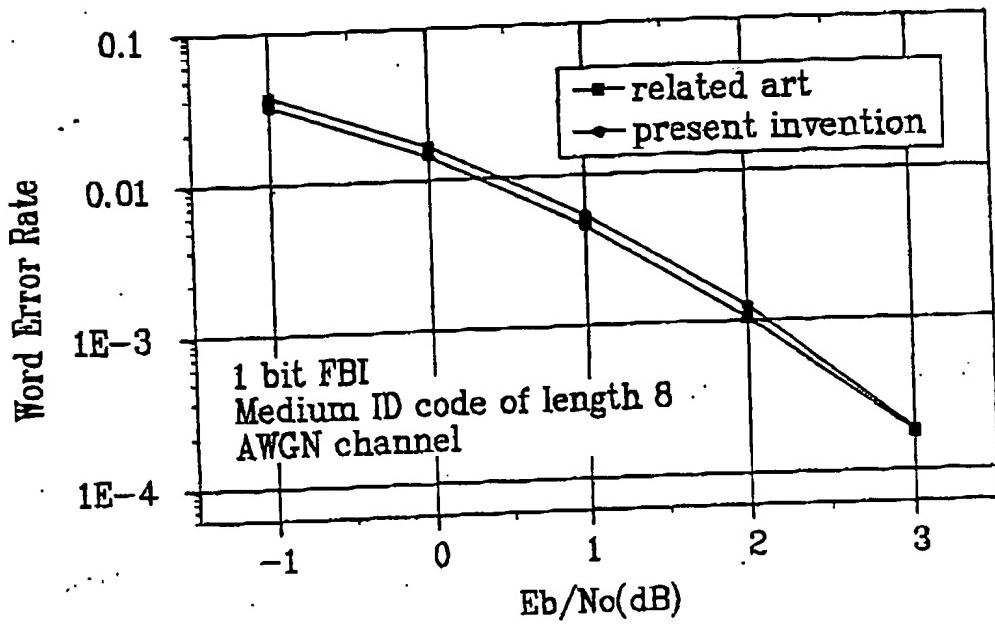


FIG.4C

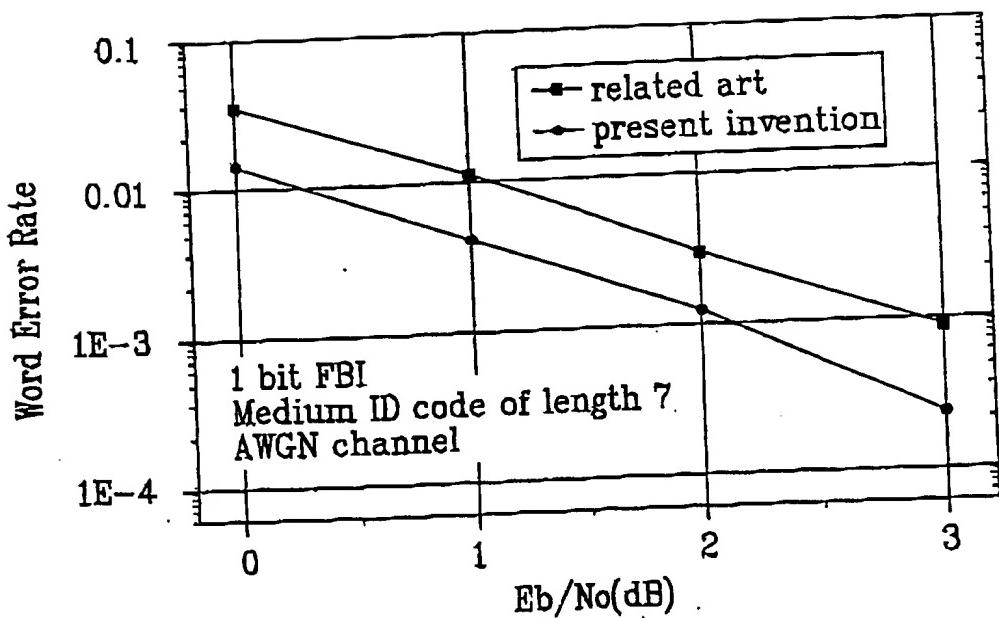


FIG.4D

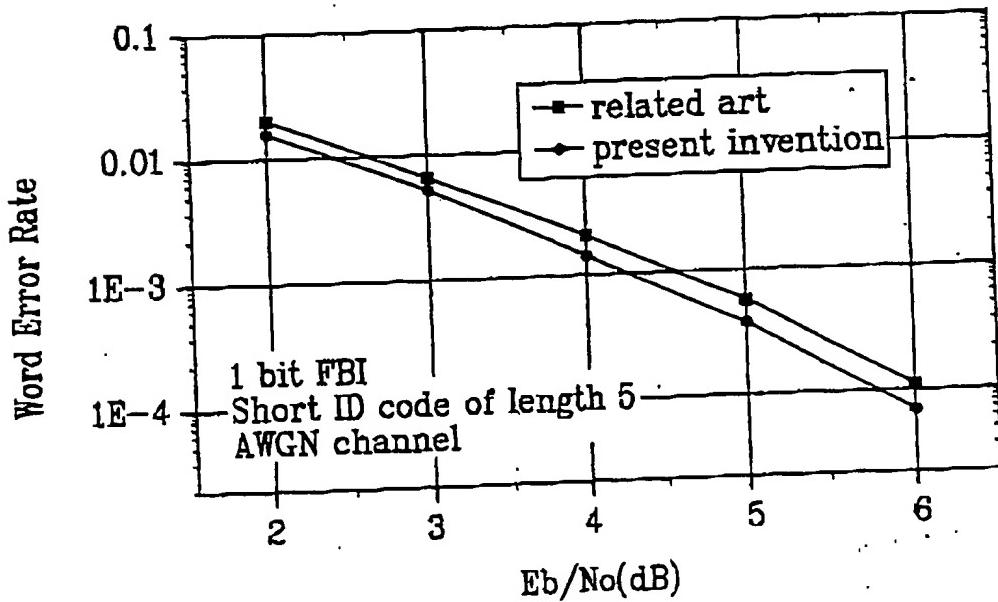


FIG.5A

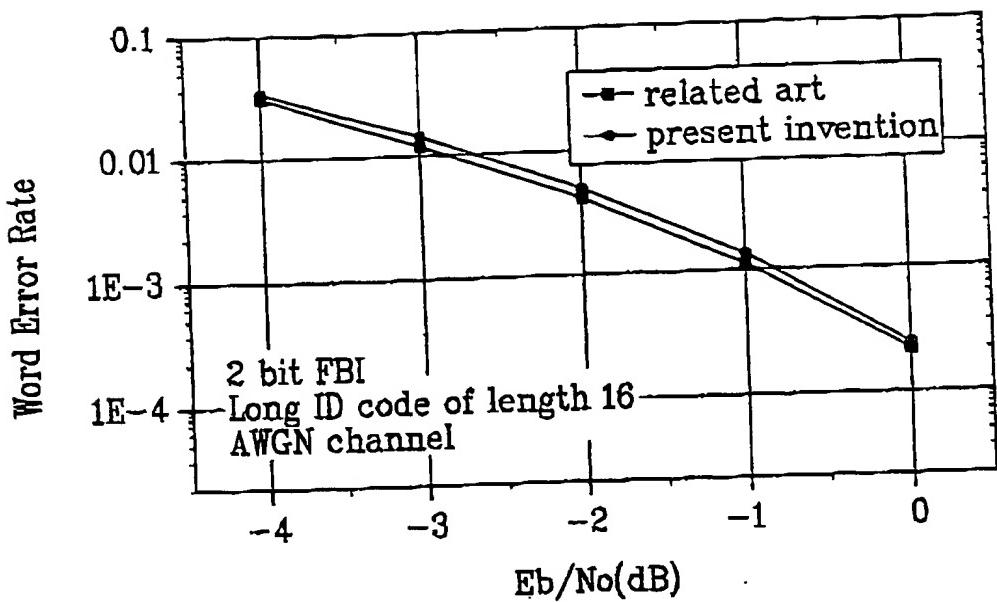


FIG.5B

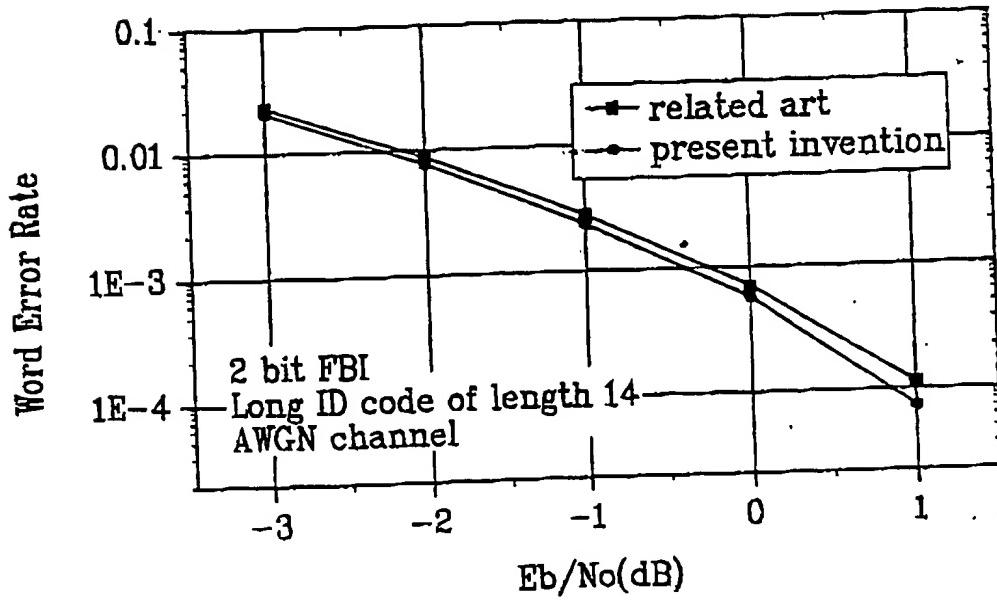


FIG.5C

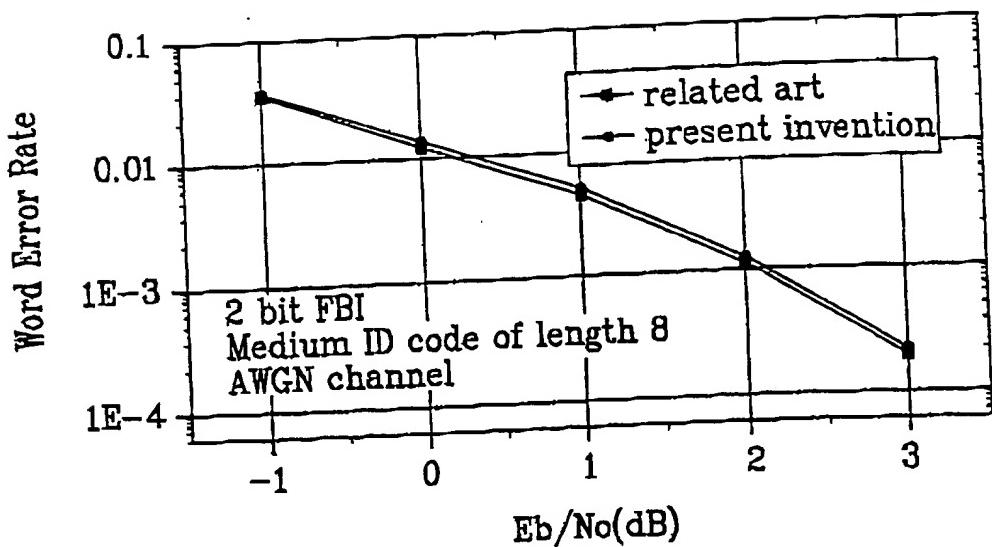


FIG.5D

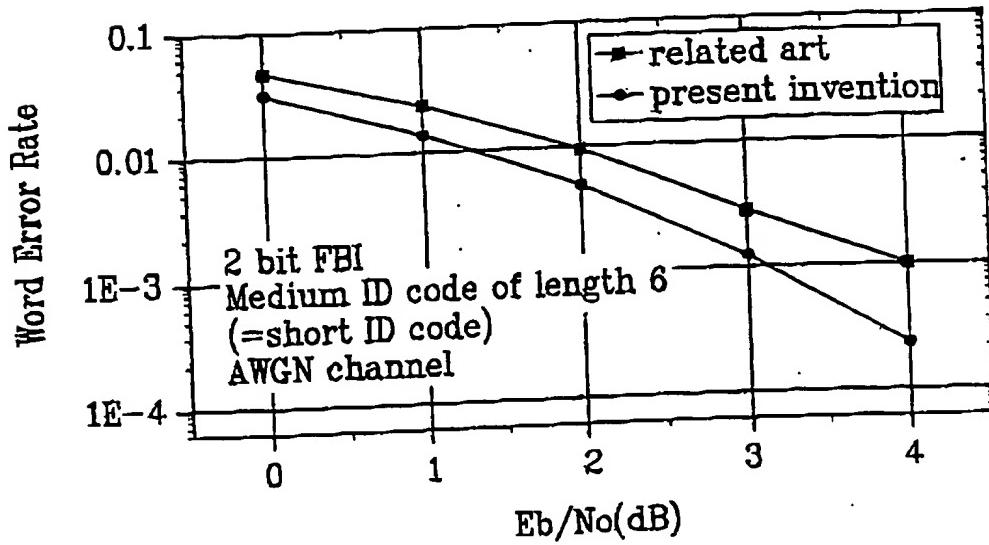


FIG.6A

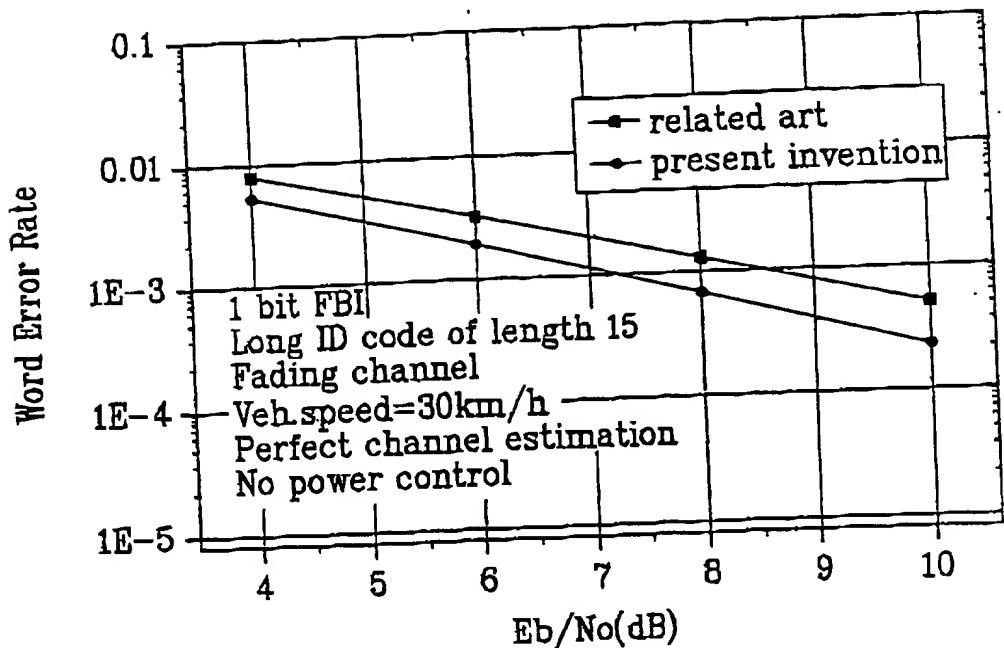


FIG.6B

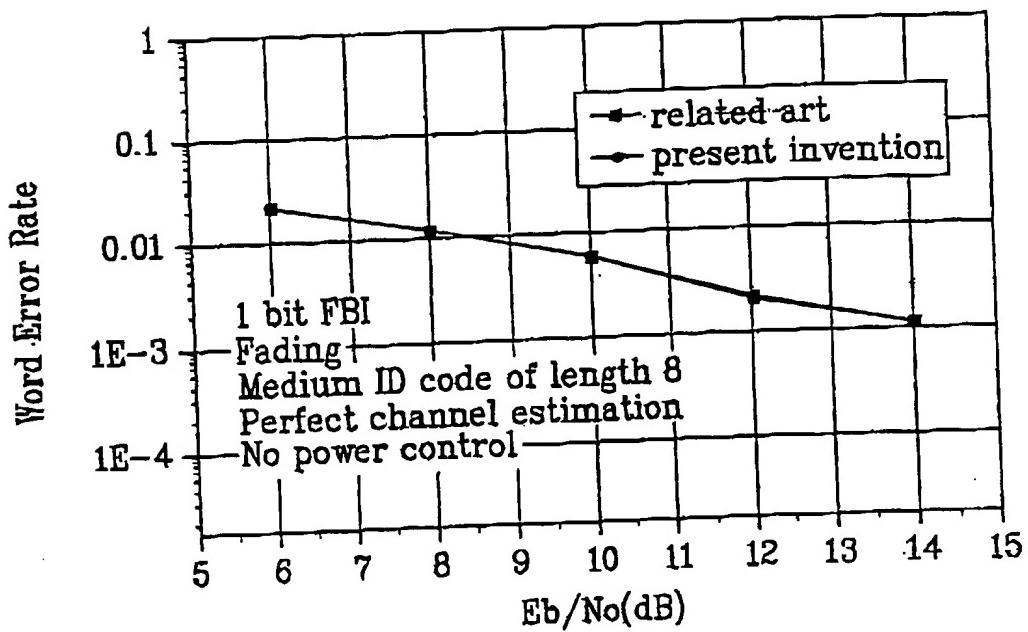


FIG.6C

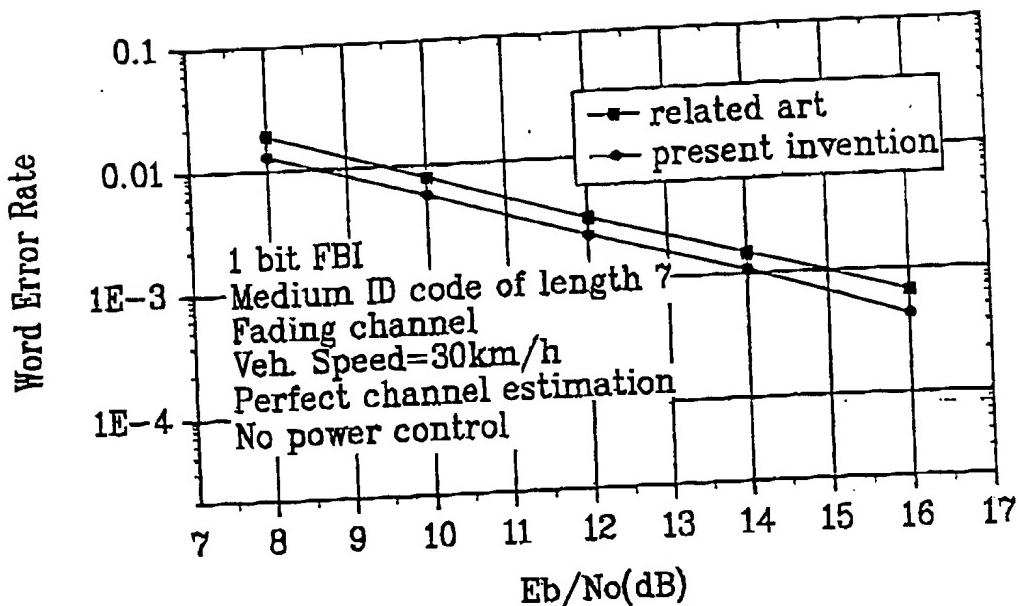


FIG.6D

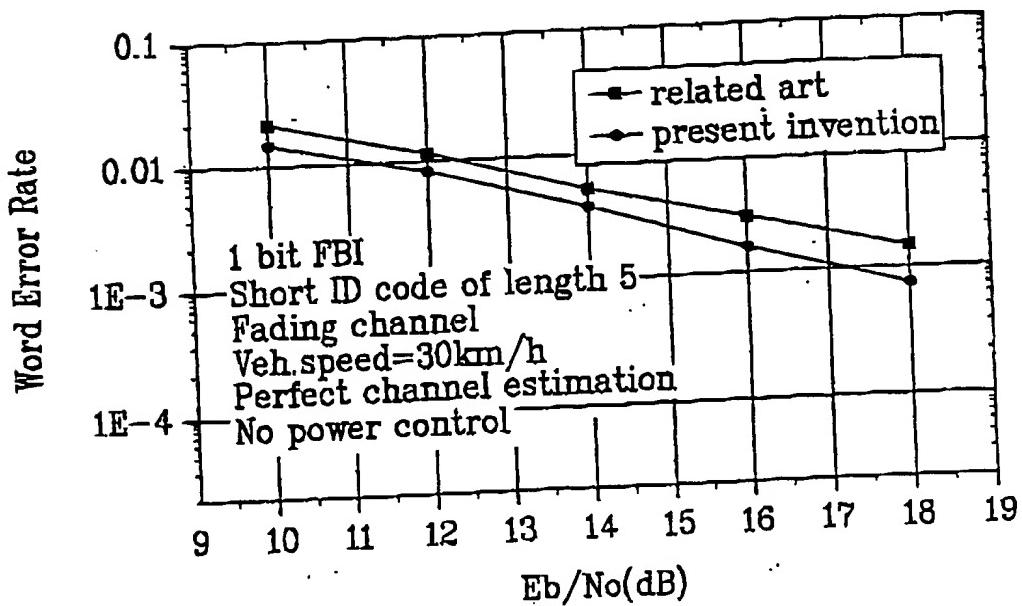


FIG.7A

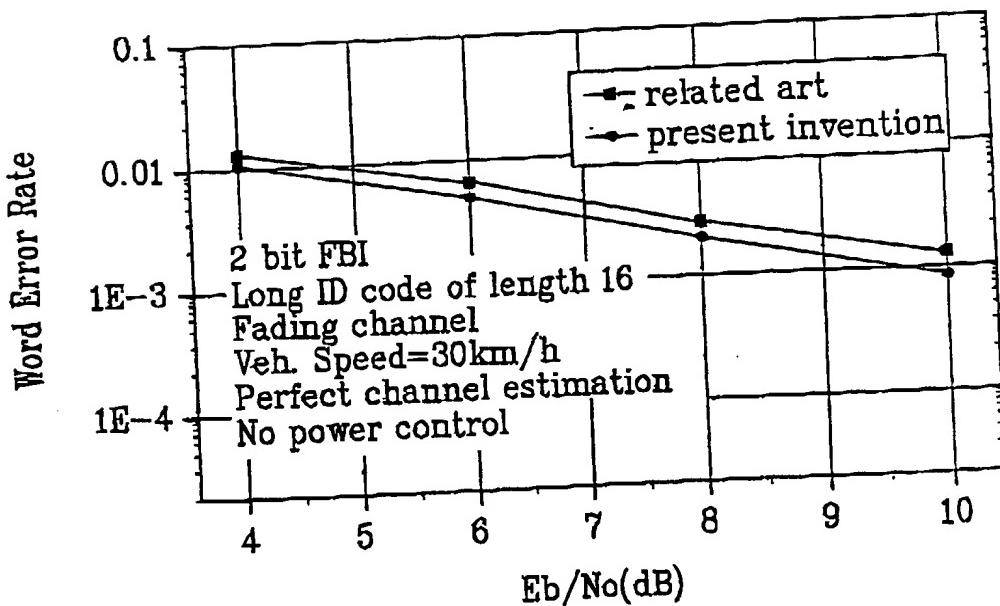


FIG.7B

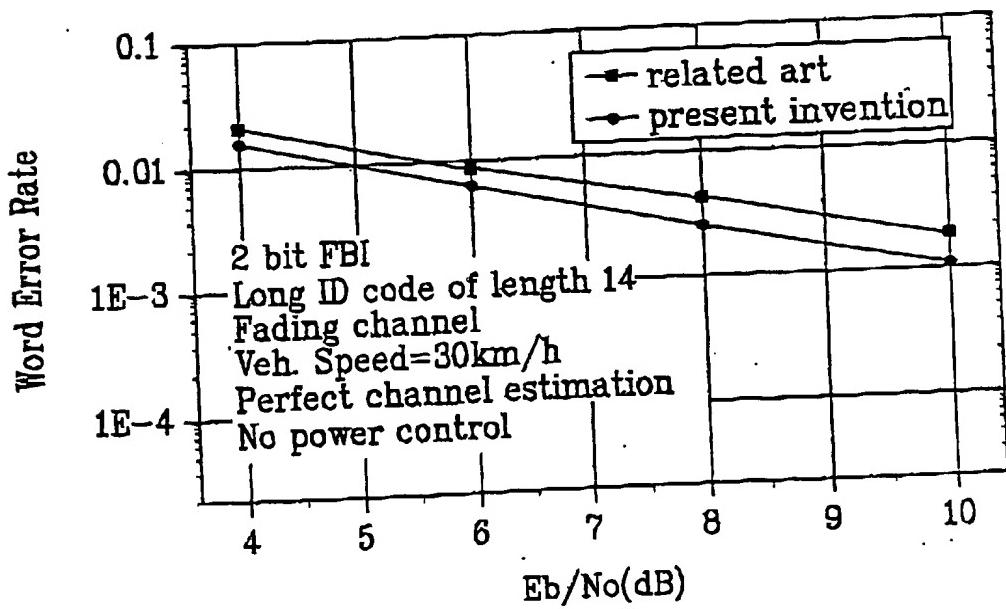


FIG. 7C

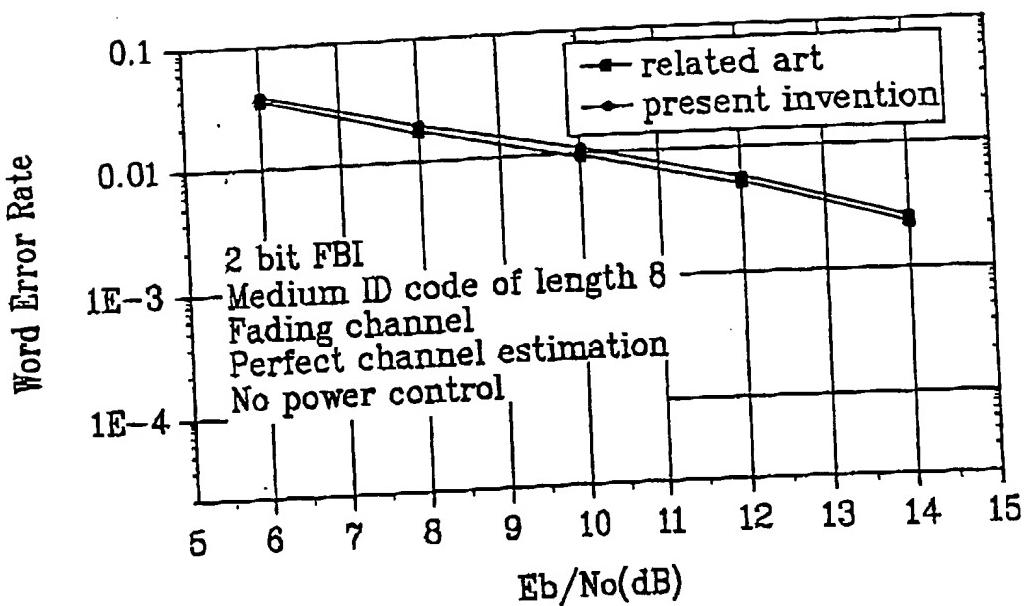


FIG. 7D

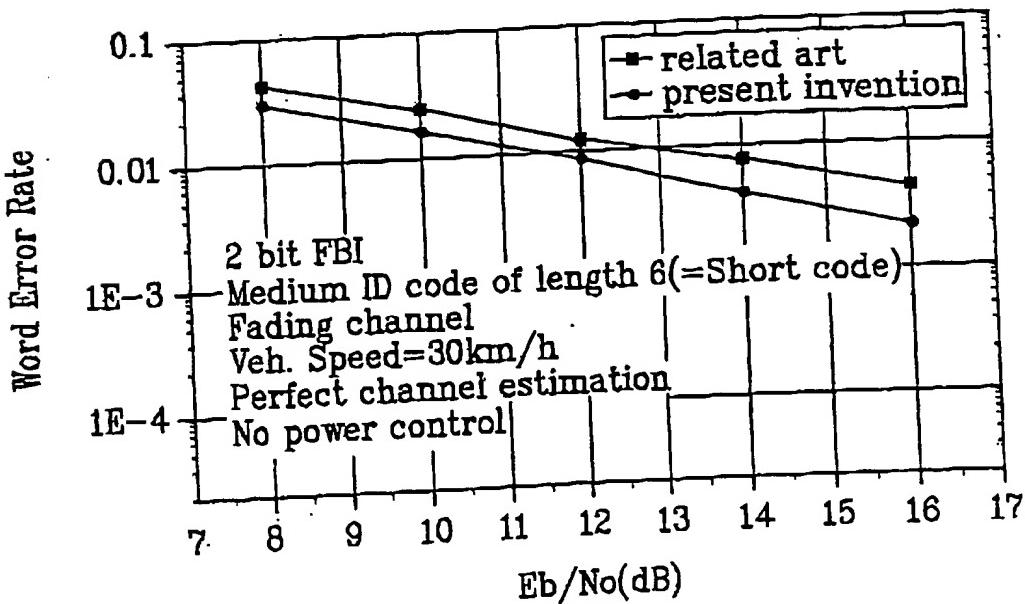


FIG.8A

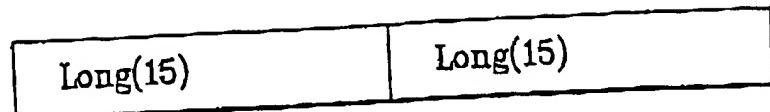


FIG.8B

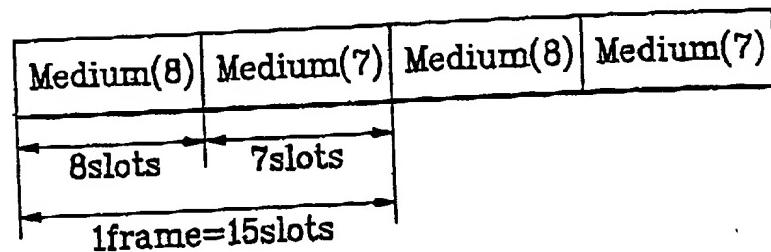


FIG.8C

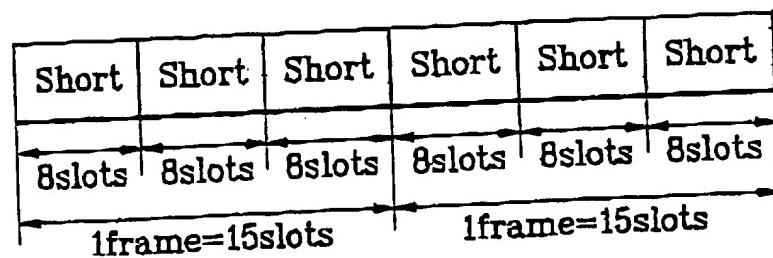


FIG. 9A

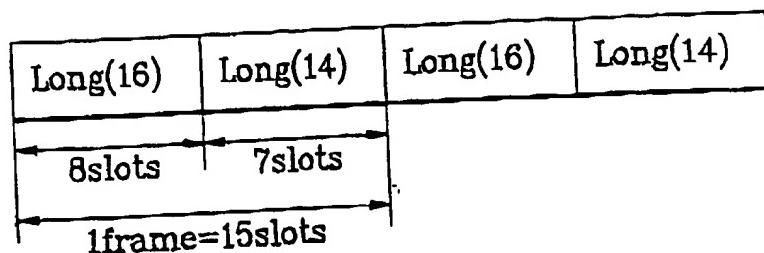


FIG. 9B

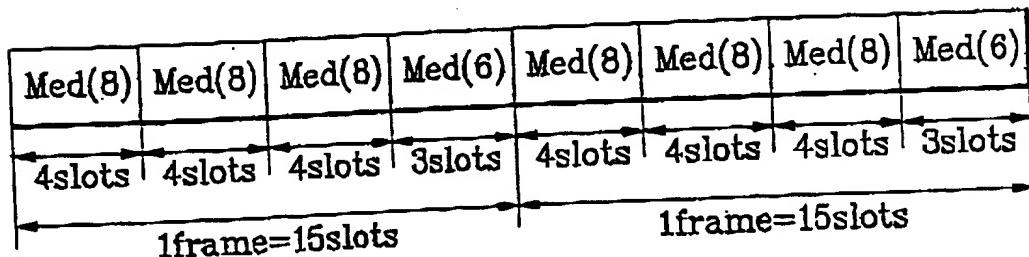


FIG. 9C

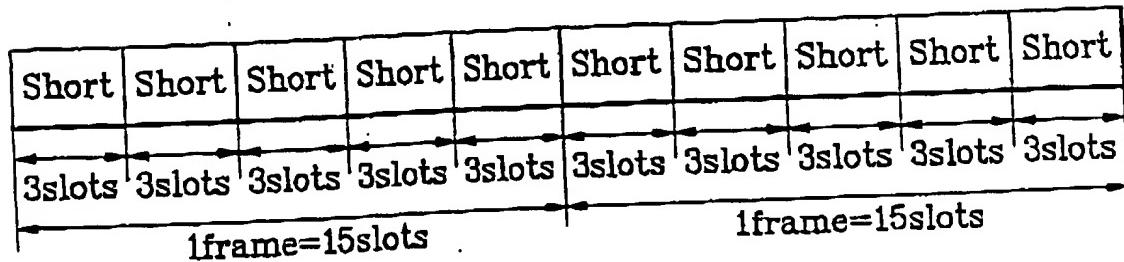


FIG.10A

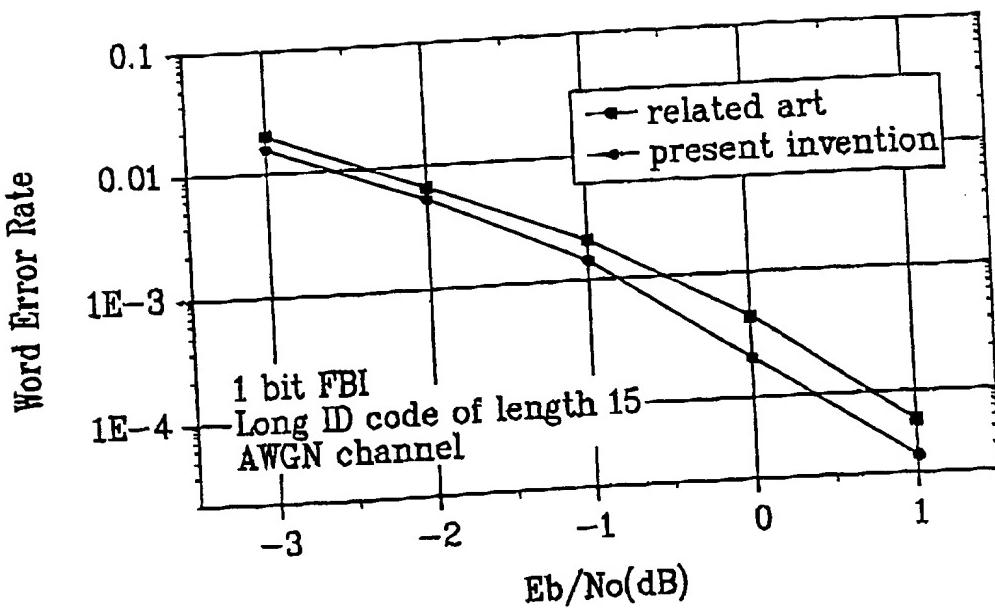


FIG.10B

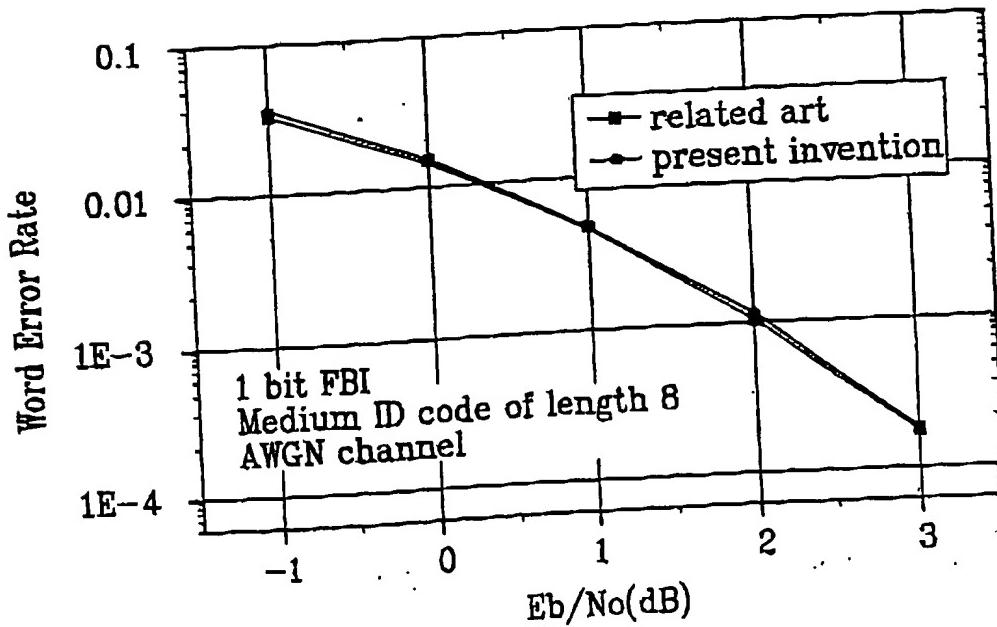


FIG.10C

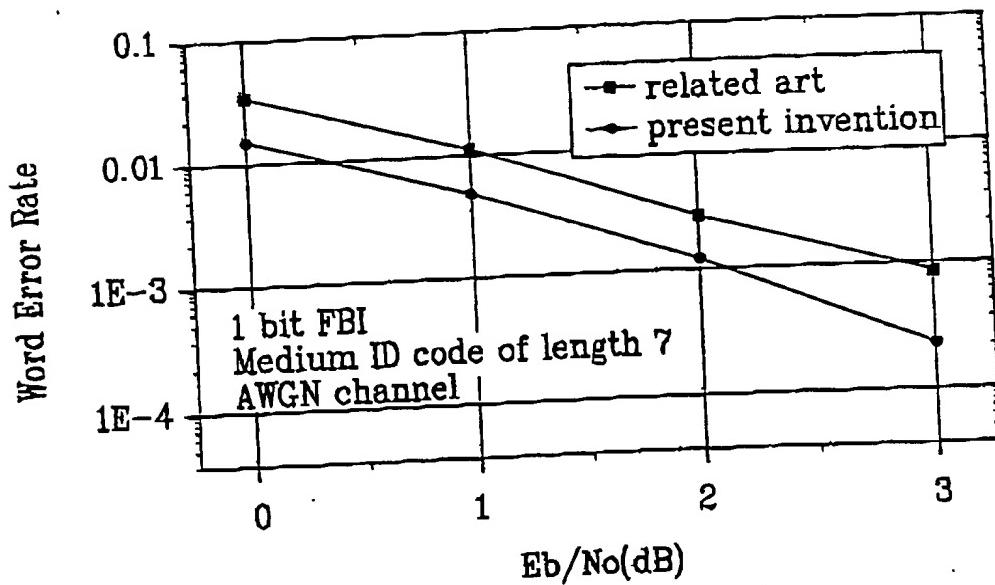


FIG.10D

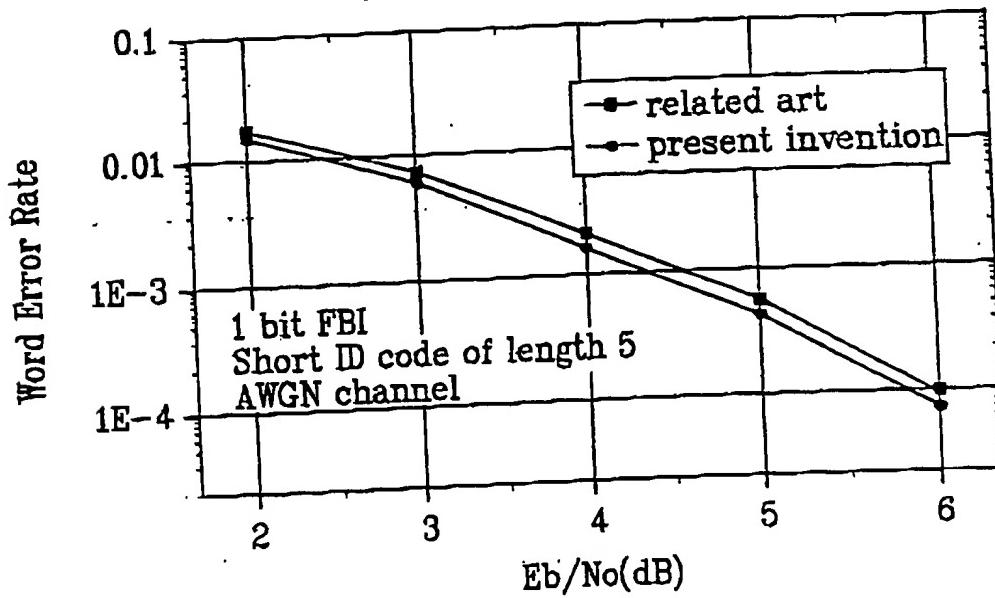


FIG.11A

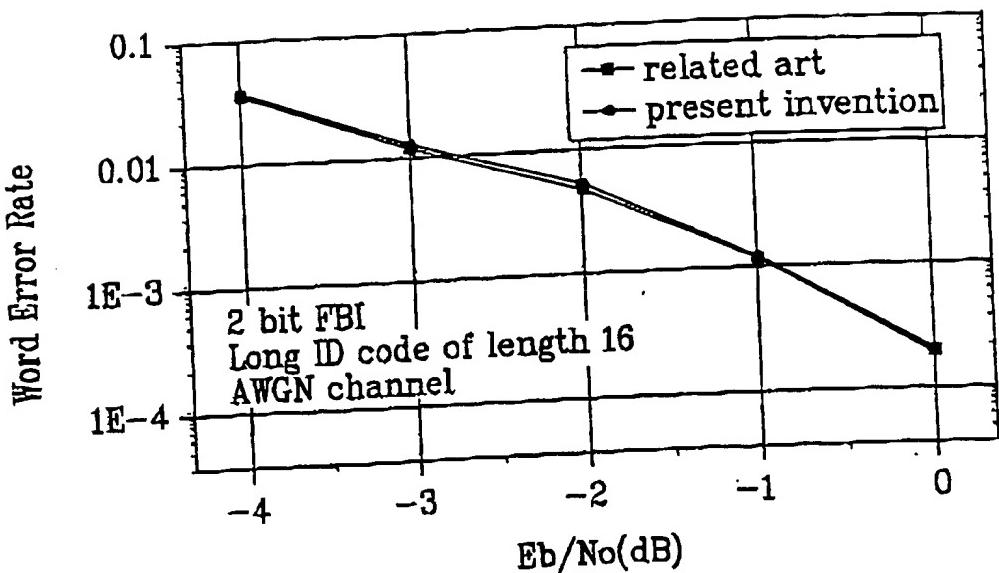


FIG.11B

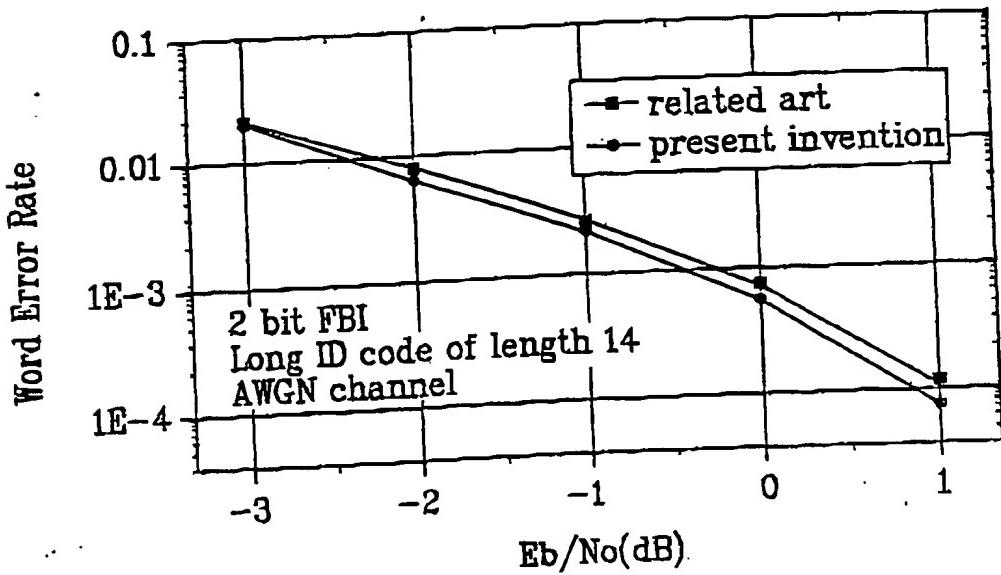


FIG.11C

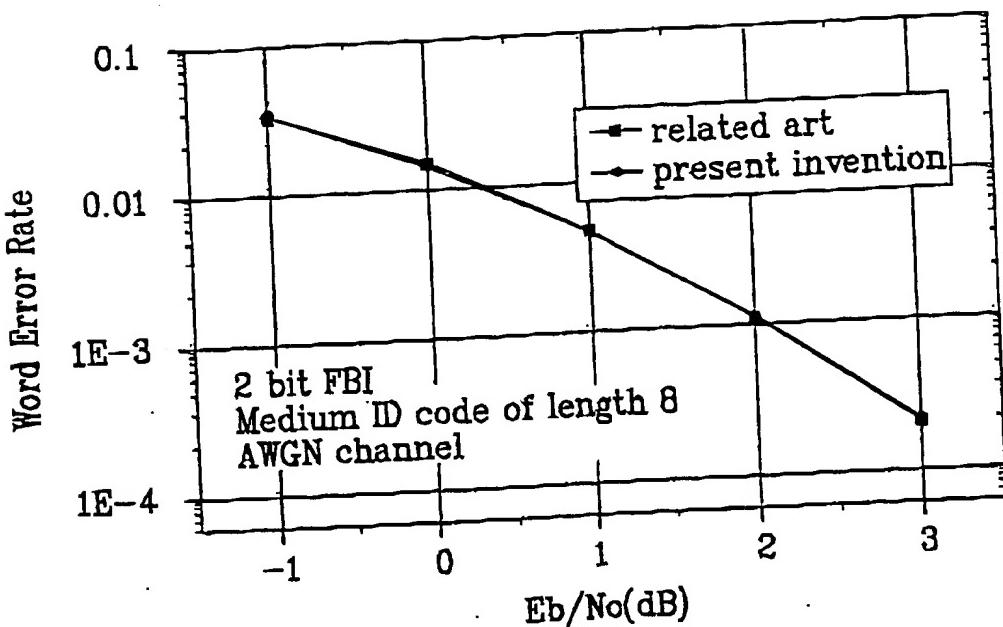


FIG.11D

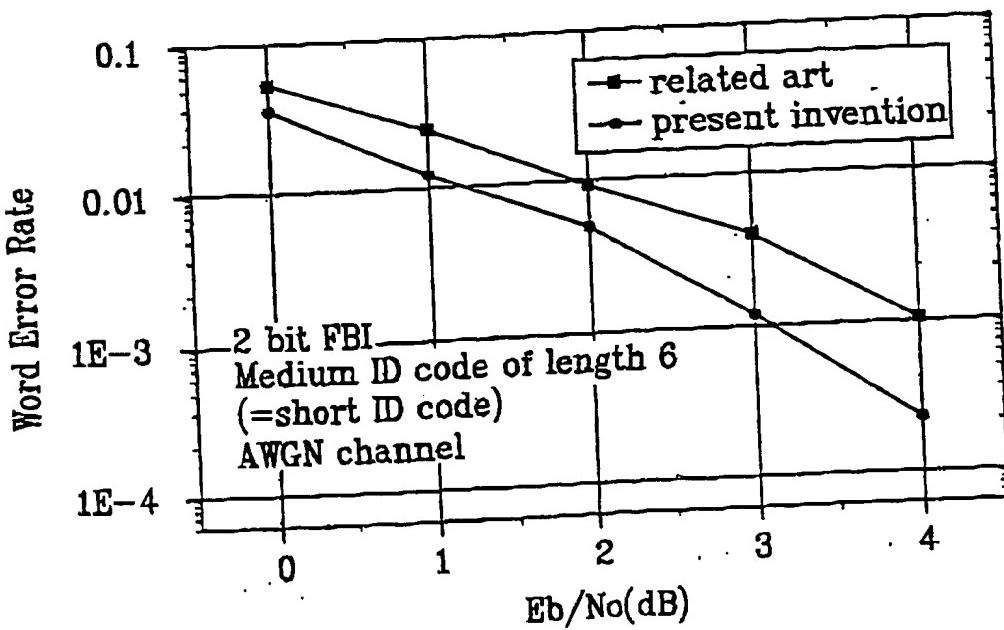


FIG.12A

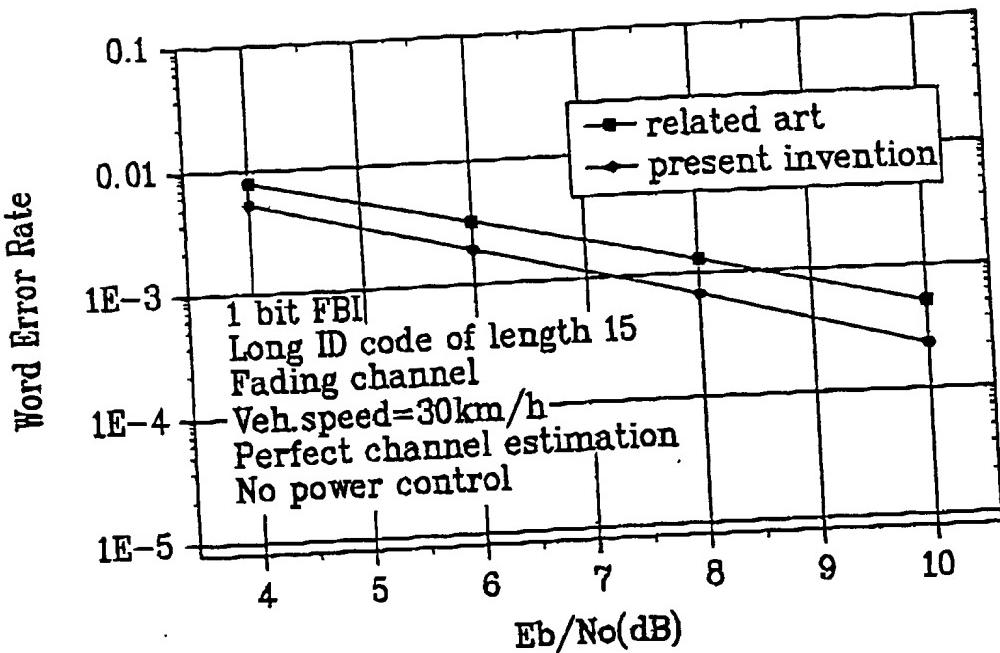


FIG.12B

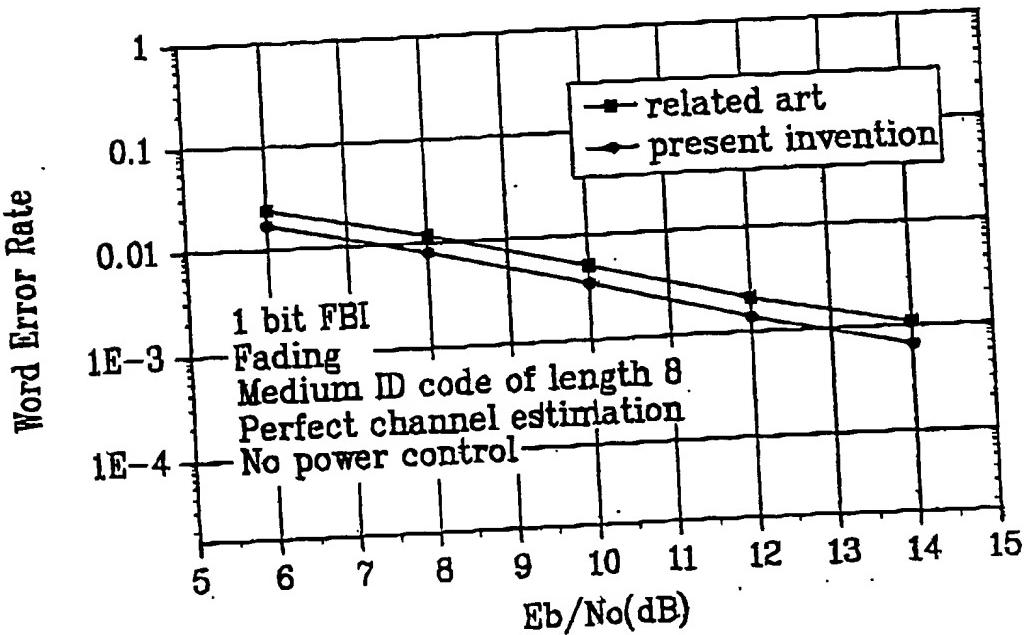


FIG.12C

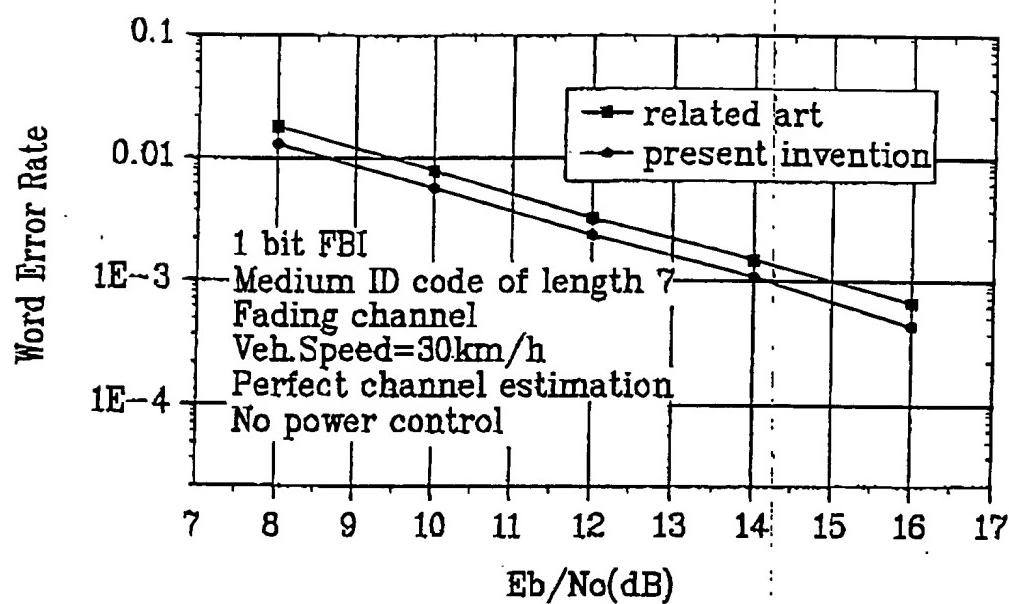


FIG.12D

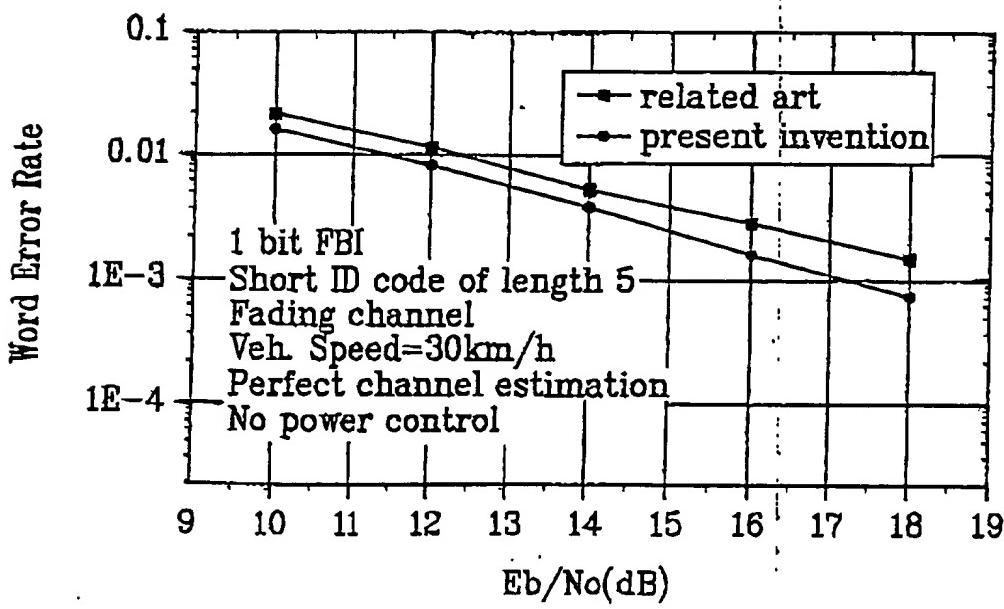


FIG.13A

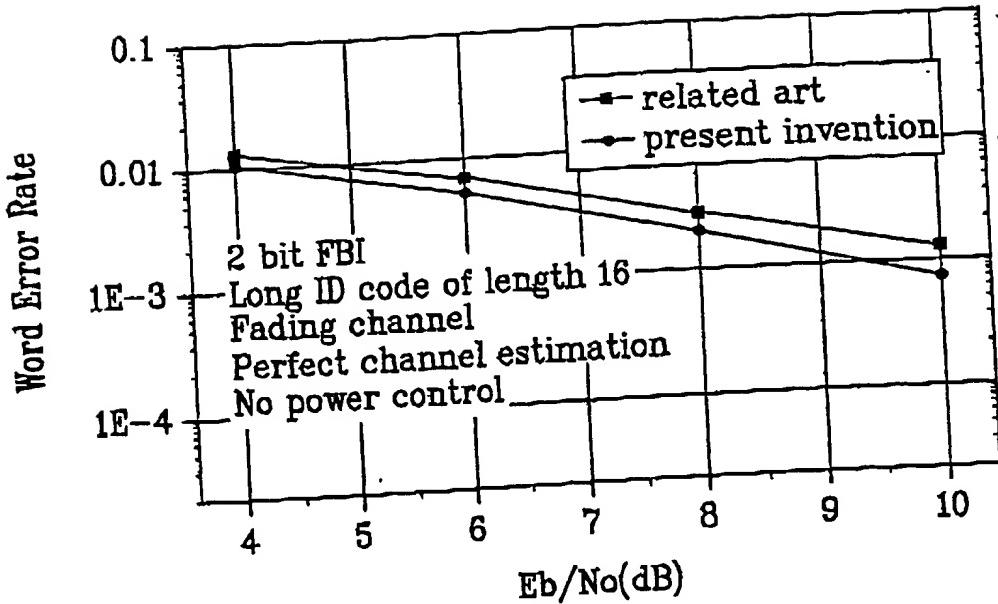


FIG.13B

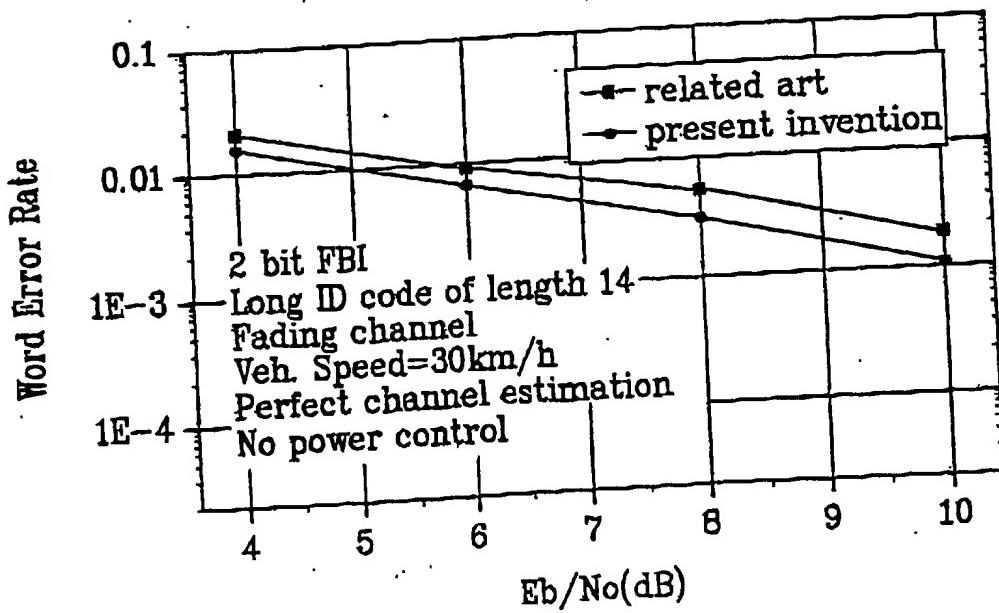


FIG.13C

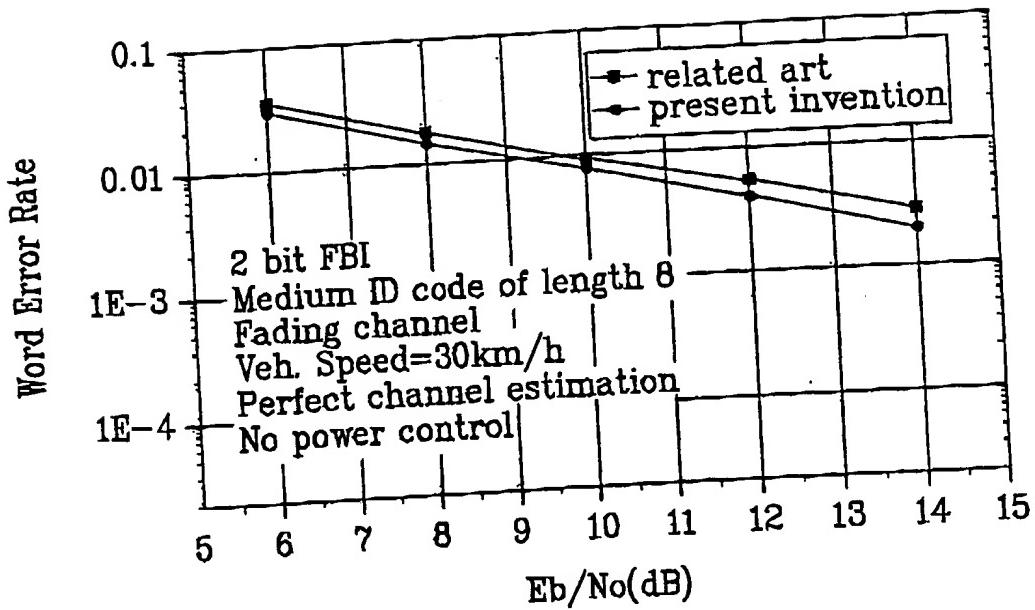


FIG.13D

